A dirge for found: the role of science in interior design pedagogy

Tijen Roshko
Department of Interior Design, University of Manitoba, Canada
Email: roshkot@cc.umanitoba.ca

This paper discusses the fundamental pedagogical objectives and methodologies that were employed in a graduate level interior design studio to expand the boundaries of applicability of the profession and to encourage multi-dimensional design strategies. As science and technology continue to accelerate and to change our society, design has become the primary mediator in the implementation of these changes in our daily lives. The role of designer has changed from primary form generator to interpreter of the new, emerging reality which is informed by science and technology. As a consequence, designers have begun to assume a prominent role in society as the intermediaries of the need of contemporary culture for synthesis. The change in the pedagogical objectives of design disciplinary studies is inescapable and must respond to the evolving role of the designers. The current study explores this evolution and provides a platform for illustrating an integrated, interdisciplinary approach to design education where science plays a dominant role.
Key words: design education, interior design pedagogy

Meslek uygulama sinirini genisletmek ve cok yonlu tasarim stratejisi gelistirmek icin bu makale mastir seviyesinde olan ic mekan tasarim sutudyosunda uygulanan temel ogeli pedagojik amaclari ve metodlari tartisir. Sosyal yapi hizla ilerleyen bilim ve teknolojiye bagimli olan bir degisim icindedir. Bu degisimlerin sosyal dokuya uygulanmasinda tasarim onemli bir yer tutmaktadir. Tasarimcilarin rolu sekil uretmenin otesine gitmis , bilim ve teknolojinin dogusturdugu gercekleri tercume eden bir araci rolune donusmustur. Buna bagli olarak, tasarimcilar toplumda dahada onem kazanmis ve cagdas kulturun sentezini yapan aracilar haline gelmislerdir. Tasarim egitimi ve calismalari pedagojik amaclarini bu degisime cevap vermek amaci ile degisime sokmak zorundadir. Bu calisma tasarimcilarin degisken rolunu incelerken, tasarim ve bilimin birlikteligine oncelik taniyan karma disiplinli egitimi vurgular.
Anahtar kelimeler: tasarim egitimi, ic mekan tasarim pedagojisi

Design is defined by Van de Ryn and Cowen as the intentional shaping of matter, energy and process to meet a perceived need or desire. They claim that design is the connection which bridges culture to nature through the use of materials, energy, and land. It is implied that architects, city planners, interior designers, landscape architects and engineers along with farmers are all involved in shaping our physical world and are all designers (2007: 24). Despite efforts at standardization, the definition of design and the design process, along with design thinking, remains elusive and complex. Design continues to redefine and expand its meaning and application. Design thinking in the 20th century has evolved from a trade-based activity to a specialized profession which is currently viewed as a field of technical research. Richard Buchanan argues that it should be recognized as a "liberal art of technological culture" (1995: 41). During the 19th century, liberal arts with its integrated thinking provided an understanding of human experience and permitted the accumulation vast amounts of knowledge. However, towards the end of 19th century, the framework of learning was further divided into specialized areas of investigation. These subdivided subjects in turn became fragmented and narrow in scope. Consequently, they lost connection not only amongst themselves but also with daily life and common problems. The search for new disciplines which amalgamate arts and sciences are now the central concerns of the intellectual and practical life of the 21st century. It is considered to be an essential approach for dealing with the complexities of today's post-industrial, technological culture. In order to find common ground among the disciplines, Buchanan advocates a new design thinking which integrates useful knowledge from both arts and sciences alike to suit the purposes of the present.

Science and design are distinguished from each other in a number of ways. Science is a systematic way of gathering knowledge about nature. Scientists order, categorize and condense this knowledge to convert it into applicable laws and theories. They deal with what exists. For scientists, during this process, observing without interference is the prime objective. They

do work outside the system that they are studying. On the other hand designers deal with the conception and creation of the artificial that does not exist. Their relationship with a system is dialectic: they are affecting and in turn affected by the system that they are studying. Design methods are heuristic and focus on a particular solution which is assembled from abstract cultural and social constructs. This is where design thinking and science thinking differ vastly from each other. Direct application of the scientific method to the design process is a poor fit. While it is undeniable that there are fundamental differences in methodologies and thinking, Dewey (1958: 355) nevertheless assigned equal importance to both art and science, and perceived science as art. According to Dewey, if modern thinking gives art and creation priority in the accumulation of knowledge, science is art and art is practice. He surmises that art is the culmination of nature and science is an assistant that organizes or conducts natural events. In this reference frame, Dewey sees no division between nature and experience, no subdivision of experience into practice and theory, and art and science, no subdivision of art into useful and fine, and menial and free (1958: 358). Buchanan (1995: 5) further iterates Dewey's arguments, which are based on the interdependence of production and the art of science, and defines technology as an art of experimental thinking. The idea of art and science as equal partners culminates in a new design thinking within which disciplinary integration remains foundational.

Design based on integrated thinking remains connected and becomes the primary source for the synthesis for our technological culture. Human experience is shaped and influenced by design at every level. These levels are summarized by Buchanan (1995: 7) as: symbolic and visual communication, material objects, activities and organized services, and finally complex systems or environments for working, playing, learning and living, where interior design is positioned. These areas can also be summarized as signs, things, actions and thoughts which are interrelated and which create the essence of contemporary design thinking.

Today, the interior design thinking process is based primarily on hierarchical and linear reasoning and must be replaced with this overlapping, interconnecting systems-thinking. Instead of dividing the given problem into segments to initiate the design thinking in isolation, systems-thinking allow us to perceive the world in its totality and gives us a holistic point of view in our problem formulation and solution. Systems-thinking considers multiple perspectives, comparatively studies detailed and dynamic complexities, and sees beyond the linear approach to design problem formulation as well as to solution generation. Therefore, the conceptual repositioning of our problems within different systems will provide novel solutions and approaches. Buchanan (1995:12) describes this as the "Doctrine of Placement" and further purports that this process provides a means to understand the intuitive quality of our work and could be an effective tool for interdisciplinary dialogue, where the new design thinking of liberal arts constitutes the essence. This interdisciplinary dialogue can be attained only when we have a basic understanding of each other's vocabulary and design thinking. While there are undeniably multitudes of perspectives in design thinking, I would here like to touch on the two primary approaches, "design as engineering " and "design as arts and crafts", since they are intimately connected to interior design methodologies and education.

Design as an engineering process proceeds from a well defined problem statement to an abstract solution and then to an implementation state. The process is executed in a linear rational manner through well-defined stages. Design guidelines are external and independent of the individual designer's skills and judgement. A good designer is considered someone who can follow procedure. The design-as-engineering approach to interior design can be quite beneficial in well-regulated typology applications, such as institutional design, where the domain and the users are well documented and defined. On the other hand, the design-as-craft perspective perceives design as an active engagement of materials, people and spaces. Designers are

involved in the evaluation of spatial interactions and contextual relations. The outcome is unique and is, to some extent, unpredictable. Establishing empathetic relations between the designers, material and users are essential to the success of the process. This perspective is more in tune with the interdisciplinary approaches of new design thinking due to its built-in dialogical properties. There is no clear way of identifying which of the design perspectives is more effective; however, it is critical to find an appropriate way of defining the assumptions about the nature of the design problems prior to the initiation of the design process.

The validity of our preliminary assumptions or preconceived notions within the empirical world defines the level of success of the design proposal. Our current education and practice assume that design problems are simple, that the accumulation of design knowledge will provide solutions for any given design problem, that designers can be a substitute for a user since they are essentially the same people, that the more highly developed sensitivity and perceptual skills of the designer provide higher social and cultural values than a lay-person, that the expertise of the designer is beyond reproach, and that criticism of the design outcome based on the functionality of the work is unjustified since design is a contributor to the art and culture of society. The interdependencies of the modern world and the complex consequences of our design actions on natural systems are quite evident and require modification to design theory through the assumption that design problems are complex and unique (Jacques 1982: 41). The assumption of complexity in the design problem implies that people are different, society is pluralistic and dynamic, design is a catalyst for change, and that there is a complex interdependency between the end-products and production and the system they function within. In short, design is interdependent and embedded in the infrastructure of human organization and in both natural and artificial systems. Hence, multidisciplinary, integrated design activity becomes paramount in problem formulation and solution generation, where the creation of alternatives, participation, research, and investigation become progressively more complex.

The lineage of design pedagogy is summarized in the following sections, with the intent of bringing further illumination to the development of design education and process.

The lineage of design pedagogy

In response to the "new world" which appeared during the 1920s, Walter Gropius utilized a model which prioritized art and technology in curriculum development for the Bauhaus School of Design in Weimar Germany. Science was the underprivileged segment of the trinity in the art, science and technology-based curriculum. By contrast, the model for the New Bauhaus School of Design in Chicago, developed during the 1930s by Moholy-Nagy, was based on art and science. Tomas Moldanado once again celebrated the coupling between technology and science to inform his curriculum for the Hochschule Fur Gestaltung, in New Ulm during the 1950s in response to the "new culture" which embraced science and technology as the ideal (Findeli 2001). Today, we are still looking at the Bauhaus lineage to inform our epistemology of design. While it is undeniable that art, science and technology are all part of the archetypal tri-polar model, there are nevertheless great variations in the level of emphasis placed on the individual components.

Allan Findeli (2001:10-16) argues that in order to find coherence in the curriculum it is necessary to define the overall purpose of design education and practice. Currently, we are preoccupied with a culture-based approach to design. He invites us to consider a new theoretical model whose theoretical framework is inspired by system logic, complexity theories, and practical philosophy. In his vision, visual intelligence and technology as a moral act replace the

science and technology component of the model. Finally, he modifies the art component with a phenomenology-based aesthetic intuition.

Findeli (2001:11-12) defines visual intelligence as an ability to see the world in its complexity and interrelatedness. He defines the interrelated subsystems which operate on different logic as the man-made world, the biophysical world, the social world and the symbolic world. He argues that design projects operate within the complex assembly of these inner and outer worlds. Therefore, the visual intelligence of the designer must be cable of delving into these different realms with dexterity. He reminds us of Moholy-Nagy's words, "design is not a profession but an attitude" (2001: 12). The designer, as a synthesizer of the emerging realities, must alter his or her attitude to reflect our ecological responsibilities with renewed visual intelligence.

During the industrial revolution, design acted as the mediator to soften the effects of industrialization on the socio-cultural realm, using aesthetics as a tool. Later, modern and post-modern society demanded that design embrace, as mediator, ergonomics and semiotics respectively (Findeli 2001: 15). Today we are looking at design once again as a medium to soften the consequences of accelerated science and technology. We want our built environments to be socially, culturally and economically viable. The role of designers is shifting from service industry worker to interpreter of the new complexities of our living world. Designers are asked to recognize the complexities of the world and to offer novel approaches in their solutions. In order to fulfill the role of a synthesizer of knowledge, designers have a renewed purpose in their design education. Although the general purpose of design has developed within the Bauhaus tradition, the new purpose of design must be firmly based on the central concerns of the natural world. In addition, socio-cultural and economic sustainability should be considered alongside ecological concerns. Therefore technological sensitivity becomes an issue of ethics. Designers are part of the eco-system and should be armed with knowledge of ecological and technological ethics.

The undisputed role of the creative aspects of design has been acknowledged by current pedagogical models; however, our age demands to see everything in relationship and demands the dexterity to scale-link not only across the board from product to urban design, but among other disciplines as well. This is where integrated design thinking becomes paramount. Although the system of science can be perceived quantitatively, other systems such as human and social systems are best understood from a qualitative, phenomenological point of view. The phenomenology of human and social systems demands an existential point of view and must respect the intuitive process of aesthetic development.

The studies which follow were housed within a graduate level Interior Design Materials studio. The learning objectives, which are founded on Findeli's modified pedagogical model, can be listed as follows: develop technological ethics, develop and acknowledge the intuitive development of design aesthetics, foster a notion of teamwork, develop methods to see the world in its various complexities, learn to scale-link, and finally develop scientific methodologies to expand interior design operational and methodological boundaries. Furthermore, the studio applications are considered as a medium to further demonstrate the importance of the liberal arts approach to design thinking, where science and art are considered equal partners. The doctrine of placements as a tool for interdisciplinary dialogue was implemented during problem formulation as well as solution generation. The given design problem was to be placed and perceived within social and technological spaces, rather than within the customary physical space. Each design problem is situated within the current socio-cultural environment of our technological society with a specific area of concentration. Each studio example has separate areas of investigation; White+Noise looks at the changing body and space relation, while "Orb" questions the morphology of spaces under the infusion of technology. Both projects synthesize

information from a wide range of disciplines, from humanities to science and engineering. In addition, during implementation, students developed technical skills and new methodologies from both perspectives of design-as-engineering and design-as-craft. A conclusion for each design proposal remains subjective and each proposal operates at the porous boundaries of art, science and technology.

White+noise

Undeniably, the omnipresence of technological devices has enabled us to appraise the substantial realities of life. Bodily disassociation from the tangible aspects of life is exponentially increasing as a direct consequence of our desire to dominate nature. Computerization, automation and added technological enhancement diminish the sensory aspects of our tasks. As Shoshana describes: "Absorption, immediacy and organic responsiveness are superseded by distance, coolness and remoteness" (1988: 75) and also, we might add, with silence. Contrary to claims of "the enhancement of our abilities to sense the world and each other" (Papadopoulos 2007: 62), technological devices attenuate our field of perception and render us dependent and less able to respond to our natural environment with dexterity and bodily ingenuity. We engage with the world in soporific inertness, desensitized to our context within which fragmentation and discontinuity are the prevailing orders.

At the end of the twentieth century, our desires and needs were stimulated by the consumerist, capitalistic culture which resulted in the reorganization of the social realm; as a consequence, the body has become a medium of performance stage, where self-image is performed and managed. The management and cultivation of the body has moved from spiritual enhancement to a preoccupation with a healthy body, and finally to a marketable self (Csordas 1994: 2). Now, in the post-secular technology-supported era, we are battling the unifying effects of globalized sameness. We are acting as agents who are seeking experientially enriched performance stages to break the inertness. The body as an experiencing agent has also started to respond to its contextual boundary conditions. Csordas (1994: 6) purported that the body is a cultural phenomenon, subject to cultural variations and transformation. Today, not only are immediate body boundaries under question, but so to are boundaries between corporality, such as the boundaries between humans and machine.

Science renders our world perspicuous and real. Technology gives us the opportunity to manoeuvre within clearly identified domains. Modern life is dominated by technology, and this is most evident in devices such as TVs, hand-held personal communication devices, ipods and the like. Retreat into the private realm of passive interaction with television and video has been aggressively followed by engagement with highly interactive technologies such as camcorders, video games and mobile phones. Technology has started to mediate our social relationships, self-identities and social life in a broader sense. These forms of electronic human augmentations have become social life essentials in every scale of our physical world. Densely networked global centres are populated with ubiquitous hand-held communication and recording devices and, as they fold physical space with immediacy, we no long need to arrive; we are already there. The dressed body augmented with technology is displaced, fragmented and bound both physically and sensually in the liminality of Gibsonian space, in which "consensual hallucinations" take place (Gibson 1984). We are at an epoch within which self-identity is no longer predominantly derived from real, authentic and embodied experiences, but rather is constructed from the simulated hyper-realities of cyberspace. Along with the dressed body, the technology-reinforced second skin is a cogent entity within the social order. The immediacy of the flow of electronic communications has provided conveniences, even cultivated forms of emotive connectedness;

however, it allows limited possibility for face-to-face interactions and consequently erodes social skills. Our new technology-augmented body needs a new existential social platform to perform its identity. Not only have electronically mediated communications migrated from the workplace to private and social spheres, but they have also started to influence essential cultural constructs such as language and writing. Instant text messaging, SMS, chat rooms, facebooks and recently i-phones have started to sever the human vocal connections and to metamorphose our prose into a succinct set of abbreviations or inversely into prolix.

Interactive textiles, with their integrated technologies which respond to various environmental stimuli, such as light, heat, and sound, have started to flood the mainstream market. These new materials and garments have begun to establish a new interaction matrix between the human body and the immediate environment. This paradigm shift in the social as well as the private domain demands a redefinition of boundary conditions and individual roles in our society. While the human body remains at the center of all things, our perception of the world changes dramatically. Our place-making, sense of space and sense of privacy are all redefined, and daily narratives are rewritten as the technology-reinforced second skin continually affects our understanding of the world around us.

The Design Studio was asked to create an intimate enclosure which investigates the relationship between the body and its immediate context using materials and digital technologies as the mediators. The focus was on the redefinition of our interaction with the built environments, on our position in this rapidly developing, technology-modified social context, and on our own individuality and sense of privacy. The initial parameters of the study demanded that the garment respond continually to its environment through the generation of light, through which the culturally based private domain is defined. The conceptual positioning of the proposed garment was rationalized by the design group as follows:

> We are members of a generation steadily losing vocal connection. With the growing popularity of instant messaging and electronic mail, we favour a communication method of emotionless text and imagery over personal contact and face-to-face interaction. 'White+Noise' is a response to the unsettling societal trend of losing voice.

The metaphoric integration of Sonic Fabric into the construction of White+Noise was intended to reflect the loss of sound in the ubiquitous communication technology exchange. Sonic Fabric was designed by Alyce Santoro in collaboration with Designtex. This currently mass-produced product is constructed from recycled spools of audio tape which are woven into fabric. When Sonic Fabric is activated with a magnetic tape-head, it reveals the embedded sound memory. The design team described the process of conception as follows:

The form and making of the second skin responds to the levels and waves of sound emitted within the interior environment. The conceptual notion of sound waves informs the design of the overall garment. Large swatches of Sonic Fabric were used to enclose the body in petal-like forms which overlap and define the garment. Sound responsive glow wires at various frequencies, along with the sensor array, are integrated along the edges of the garment. The headpiece collects and projects the act of capturing sound that is otherwise lost in the environment. It begins at the spine, a central location for the visceral connection to sound, then travels from the ear, down the spine and back out to the environment. Three strings, each containing 12 LED lights, were integrated along the headpiece, and further enclosed with the petal-like formed Sonic Fabric. The bodice of the garment was intended to fit closest to the body. The cassette tapes were sewn onto a corset form in both vertical and horizontal lines. The horizontal lines mimic the sound waves as they are captured from the headpiece of the garment, down to the spine.

The philosopher Jeremy Bentham became one of the leading figures of the 19th century with his design of Panopticon (Bentham 1995). The panopticon is a cylinder with radiating

cells which are arranged such that no cell is ever allowed to escape the scrutiny of the center guard station. The cells were always lit, while the central guard station is always in the dark. The prisoners presume that at every moment they are under surveillance, since they have no way of discerning the period of vigilance. Therefore, the person or persons who are running the panopticon preserve ultimate power over the minds of the incarcerated. The panopticon served as a model for some of the maximum security prisons. However, Bentham's idea was more than an architectural plan; it became a much-used metaphor and a model for twentieth century society's socio-political constructs, where power is visible and unverifiable. Foucault (1995:201-202) wrote:

> The Panopticon is a machine for disassociating the see/being seen dyad: in the peripheral ring, one is totally seen, without ever seeing; in the central tower, one sees everything without ever being seen.

Furthermore, Foucault used Bentham's Panopticon as a metaphor for today's society, where the inclination towards observation and normalization is prevalent. The technology of today's modern society has made it possible to install multitudes of panopticon structures and surveillance systems invisibly throughout society at every scale. White+Noise, with all of its technological enhancements, is an embodiment of the culture of surveillance and a reaction to our losses during our power struggle with Nature. It is a myth and a reality in the time-space continuum.

The dormant state of White+Noise is passive and non-interactive and it remains in the dark, blending with the silent flux of communication. It is an embodiment of the non-vocal culture. It silently maintains its position as an artefact and remains captive in the virtual world. White+Noise remains in the dissolved outer rims of the panopticon, where one can neither be seen nor punished. The governing body and the subject become one, and all boundaries merge in the all encompassing darkness. It introjects ambient silence and the yearning for the real; unable to capture the gestures of the social platform, however, it remains safe and compliant. It defies sartoriality in its symbolic mode.

Figure 1
White+Noise (2009, photograph, Class of 2009).

Once the performative act starts, White+Noise moves through space as an interactive agent in the social order; the sounds of footsteps are captured through its sensor array and, as such, White+Noise becomes an extension of the body and the senses. The captured ambient noise that is generated through movement insures a continuing sound source, resulting in the illumination of White+Noise at the spine, head and along the boundary, and consequently activates a reverse panopticon. In this case, it is not the surrounding cells but rather the central guard station that is illuminated, with nowhere to hide. White+Noise, with all its brightness, becomes the tower at the center of the social realm. It is opened up to unverifiable and continuous observation from its immediate context; as a result, its power is relinquished to the observer, along with its freedom.

The body is scrutinized at all times and read as a text, where social realities are inscribed and interpreted as a cultural object. Dress merges with the body and becomes an intimate enclosure, with its clearly defined, illuminated boundaries. In its imaginary mode, White+Noise becomes specular and projects what we want to be. However, individual order is destined to be modified and normalized into the social order by the divine all-observing power, as we lament the loss of self and the lightness of being–in–the–world. White+Noise reminds us of the sound we have lost by illuminating itself; in doing so, it sabotages its own essence, identity and freedom in its paradoxical existence. White+Noise remains captive in the liminal space between the real and the virtual.

ORB Wall

The project engagement was centered on the investigation of Boundary Conditions and Responsive Interior Systems. The dependence of spatial morphologies on technological insertions also constituted part of the project scope. The main vertical transportation of the Architecture building on campus was given as a context of the study.

Technology is integrated into our lives to such an extent that it is readily available and has developed disposable qualities. More importantly, the software which drives these devices has started to play a more prominent role in our environment. The software defines the interactions between individuals and their environment, and also defines our social interactions. The paradigm shift in the social domain demands a redefinition of boundary conditions and individual roles in our society. The project wall was geared to investigate the relationship between materials, digital technologies and users in the public domain. It considers the role of disposable electronics and commercially accessible materials as some of the integral parts of interiors. Tectonics, modularity, sensory experiences, detailing and the ways in which they can be applied to the interior design scale have also played a critical role in the development of the project.

The proposed form was intended to operate at the intersection of technology and collective culture, with an emphasis on interior design. The students were invited to produce a wall system which continually responds to its environment with the elements of sound and light. The wall system was developed as an aggregate system of cells. Commercially available plastic shot glasses were assembled and wired with LED lights to create a "unit cell". Subsequently, each cell was connected to create an interactive wall system called "ORB" which was fashioned with motion sensors, sound recorders, microphones and data control units. ORB recorded the conversations of the occupants for a period of one minute and replayed it after a five second delay, while it traced the movements of the occupants with light. See Figures 3 and 4. The proposed solution demonstrated the transition from the two-dimensional realm to the three dimensional qualities of interior design in terms of its scale and application and transition points. ORB was defined by the team as follows:

> ORB redefines our perception of walking in the Russell Building stairwell, transforming this non-place, characterized by a mundane and repetitive experience, to a distinct and newly defined place. Place is created through aesthetic experience by engaging the senses of vision and hearing. By responding to the movement and sounds of users, ORB comments on our society of increasing surveillance. The user and environment enter into a symbiotic relationship, constantly influencing and reacting to each other.

The sustainability principle was manifested in the development of adaptive reuse strategies for both commercially available products and electronic devices, in response to the throw-away society and its ocular-based materialistic sensibilities. With technology and its effects on cultural sustainability as the primary platforms, ORB focuses on human qualities and sensory experiences as an integral part of interiors, which are otherwise sensory deprived non-spaces. The

project also challenged the boundary conditions and established sensorial relationships between the environment and the users. It aimed to redefine our interaction with the built environments and our position in this rapidly developing, technology modified social context. The installation of ORB initiated additional discussions on the notions of surveillance and the ethics of public domains, where collective equality is the prime objective. The manipulated space that captures sound and denies privacy and traces movement remained between the converging boundaries of art, science and spatial design where the panopticon is active in a different dimension. Real is captured in the virtual, where social and cultural, physical and virtual systems of values are indistinguishable.

Figure 2
ORB Wall Installation (2008, Photograph, Class of 2008).

Conclusion

Interweaving the scientific method with the design process generated a medium for a liberal arts way of learning in the studio. Both projects place the emphasis on the design process as the primary segment within which the new tools and knowledge have been acquired. Design thinking moved beyond the linear approach and investigated several possibilities in different contexts. Students operated between the modes of design-as-craft and design-as-engineering. The final proposals were positioned on the boundaries between art and science, theory and practice. Visual intelligence, technological ethics and more importantly ecological responsibilities for the materials and design production are considered as the central values. The demands of praxis on the education of new designers require multi-level awareness of other disciplines. Interior designers are viewed as professional team members and facilitators. This amalgamation of science into the design process and the shifting of focus from the end product to the process gave the students the opportunity to perceive and design in more flexible and liberal ways. Furthermore, it contributed to the maintenance of the professional solvency of interior design.

The acts of transformation and configuration of the design and experience of interior space lie at the heart of interior design. The interior defines a place; its qualities both physical and mental are activated by their use and context. It is a place where the dialogue between activities and experiences are facilitated. Therefore, interiors are a network of activities, links, conduits of ideas which are intertwined and which affect and are affected by their cultural and physical context. Interior design is an intellectual activity. Interior design work is more mental than manual. Therefore, art and science are inseparable components of interior design thinking and process. According to Dewey (1958:391), science is art and: "Art does not create the forms; it is their selection and organization in such ways as to enhance, prolong and purify the perceptual experience". Furthermore, interior design is a generative and a speculative practice of social

responsibility, of technological innovation, of independent spatial experimentation with infinite capacity to redefine itself. The "Orb" and "White+Noise" are moving towards a new type of interior design which lies beyond a singular expression of "a dirge for sound".

Acknowledgements

Works cited

Bentham, Jeremy. 1995. Panopticon. In (Ed.)Miran Bozovic, *The Panopticon Writtings*, London:Verso.

Buchanan, Richard. 1995. Wicked Problems in Design Thinking.In (Eds.) Victor Margolin and Richard Buchanan., *The Idea of Design*:. 3-20, London: MIT Press.

Csordas, J., Thomas. 1994. Introduction: The body as representation and being-in-the-world. In (Ed.) Thomas Csordas, *Embodiment and experience: The Existential Ground of Culture and Self*, Cambridge: University of Cambridge Press.

Findeli, Alain. 2001. Rethinking Design Education for the 21st Century: Theoretical, Methodological, and Ethical Discussion, *Design Issues*, 17(1): 5-17.

Dewey, J. 1958. Experience and Nature, New York: Dover Publication.

Foucault, Michel. 1995. Discipline and Punish: The Birth of the Prison. Translated by Alan Sheridan. New York: Vintage Books.

Gibson, William. 1984. Neuromancer, New York: Ace Books.

Jacques, Robin. 1982. Changing Assumptions about Design Problems. In (Eds.) B., Evans, J.A. Powell and R.J. Talbot. *Changing Design*: 41-55, New York: John Wiley and Sons Ltd.

Papadopoulos, Despina. 2007.Wearable Technologies, Portable Architectures and the Vicissitudes of the Space Between, *Architectural Design/4D Social: Interactive Design Environments*. 77(4): 62-7.

Shoshana, Zuboff. (1988). In the Age of Smart Machine: The Future of Work and Power. New York: BasicBooks.

Van Der Ryn, S., Cowan, S. 2007. Ecological Design. London: Island Press.

Tijen Roshko is currently an Assistant Professor in the Department of Interior Design at the University of Manitoba. Tijen has earned both a Masters Degree in Nuclear Physics and a Bachelors Degree in Interior Design. She is actively pursuing research on the vernacular architecture of Cambodia. Her teaching philosophy centers on the implementation of new methodologies and techniques, particularly in the areas of bio-design and intelligent materials. She has 15 years of international design experience and obtained her NCIDQ certification during her practice. She has also obtained LEED accredited professional status.